

WHAT IS CLAIMED IS:

- 1 1. A brushless motor comprising:
  - 2 a stator comprising a plurality of exciting
  - 3 coils which receives drive current;
  - 4 a rotor rotatable relative to the stator;
  - 5 a first circuit section comprising a filter
  - 6 circuit for eliminating surges of electric power for
  - 7 the drive current, the first circuit section being
  - 8 produced on a wiring metal piece;
  - 9 a second circuit section comprising a control
  - 10 circuit for controlling the magnetic field generated
  - 11 by the stator by controlling the drive current, the
  - 12 second circuit section being produced on a printed
  - 13 wiring board; and
  - 14 a fuse member electrically connecting the
  - 15 wiring metal piece of the first circuit section and
  - 16 a wiring pattern formed on the printed wiring board
  - 17 of the second circuit section, the fuse member
  - 18 electrically disconnecting the wiring metal piece
  - 19 and the wiring pattern when a temperature of the
  - 20 wiring pattern becomes higher than a predetermined
  - 21 temperature.
- 1 2. The brushless motor as claimed in claim 1,
  - 2 wherein the fuse member is made of elastic and
  - 3 electro-conductive material, an end portion of the
  - 4 fuse member being fixed on the wiring metal piece of
  - 5 the first circuit portion, the other end portion of
  - 6 the fuse member being soldered with the wiring
  - 7 pattern by means of solder which melts at the
  - 8 predetermined temperature.
- 1 3. The brushless motor as claimed in claim 2,

2 wherein the other end portion of the fuse member is  
3 inserted into a through hole formed on the printed  
4 wiring board, the other end portion of the fuse  
5 member being soldered with the wiring pattern formed  
6 on a back of a surface of the printed wiring board  
7 which is opposite to the wiring metal piece.  
8 which switching devices are installed.

1 4. The brushless motor as claimed in claim 1,  
2 wherein the fuse member is located on a back of a  
3 surface of the printed wiring board on which  
4 switching devices are installed.

1 5. The brushless motor as claimed in claim 2,  
2 wherein a plurality of via holes are formed at a  
3 portion of the printed wiring board on which the  
4 other end portion of the fuse member is soldered.

1 6. The brushless motor as claimed in claim 5,  
2 wherein solder land portions are formed on a back  
3 surface of the printed wiring board by exposing a  
4 copper film at a portion around each of the via  
5 holes on the back surface of the printed wiring  
6 board.

1 7. The brushless motor as claimed in claim 6,  
2 wherein the solder land portions on the back surface  
3 are soldered with the other end portion 60b of the  
4 fuse member 60.

1 8. The brushless motor as claimed in claim 6,  
2 wherein no solder land portion is formed on a front  
3 surface which is a back of the back surface on which

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4 the other end portion of the fuse member is soldered.

1 9. The brushless motor as claimed in claim 1,  
2 wherein the first circuit section and the second  
3 circuit section are arranged in parallel with a  
4 predetermined distance therebetween.

1 10. The brushless motor as claimed in claim 9,  
2 wherein an end portion of the fuse member is fixed  
3 on the wiring metal piece of the first circuit  
4 portion by welding, and the other end portion of the  
5 fuse member is soldered with the wiring pattern by  
6 means of solder which melts at the predetermined  
7 temperature.

1 11. The brushless motor as claimed in claim 9,  
2 wherein the fuse member is made of elastic and  
3 electro-conductive material, and the other end  
4 portion of the fuse member is soldered with the  
5 wiring pattern while the fuse member is elastically  
6 deformed so that the other end portion of the fuse  
7 member is detached from the wiring pattern when the  
8 solder melts.

1 12. The brushless motor as claimed in claim 2,  
2 wherein the fuse member has a jig receiving portion  
3 which is pushed by a jig when the other end portion  
4 of the fuse member is contacted and soldered with  
5 the wiring pattern.

1 13. The brushless motor as claimed in claim 1, the  
2 first circuit section and the second circuit section  
3 are arranged three-dimensionally.

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1 14. A brushless motor comprising:  
2 a stator comprising a plurality of exciting  
3 coils which receives drive current;  
4 a rotor rotatable relative to the stator;  
5 a drive control circuit supplying the drive  
6 current to the exciting coils, the drive control  
7 circuit comprising a first circuit section for  
8 eliminating surges of electric power and a second  
9 circuit section for controlling magnetic field  
10 generated by the stator by controlling drive current  
11 treated in the first circuit section, the first  
12 circuit section and second circuit section being  
13 arranged generally in parallel with a predetermined  
14 space therebetween; and  
15 a fuse member electrically connecting the first  
16 circuit section and the second circuit section, an  
17 end portion of the fuse member being welded with the  
18 first circuit section, the other end portion of the  
19 fuse member being soldered with second circuit  
20 section, the fuse member cutting an electrical  
21 connection between the first circuit section and the  
22 second circuit section when a temperature of a part  
23 of the second circuit section becomes higher than a  
24 predetermined temperature.

1 15. A circuit structure of a brushless motor,  
2 comprising;  
3 a drive control circuit supplying drive current  
4 to exciting coils of a stator of the brushless motor,  
5 the drive control circuit comprising a first circuit  
6 section for eliminating surges of electric power and  
7 a second circuit section for controlling magnetic

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8 field generated by the stator by controlling drive  
9 current passed through the first circuit section in  
10 order to control a rotation of a rotor of the  
11 brushless motor, the first and second circuit  
12 sections being three-dimensionally arranged with a  
13 predetermined space therebetween; and  
14 a fuse member comprising a first end portion  
15 welded with the first circuit section, a second end  
16 portion soldered with the second circuit section and  
17 an intermediate elastic portion which is elastically  
18 deformed when the second end portion is soldered  
19 with the second circuit section, the second end  
20 portion being released from the second circuit  
21 section when solder connecting the second end  
22 portion and the second circuit section is melted.

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